

REMARKS

Applicant has carefully studied the outstanding Office Action. The present Response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of this application are respectfully requested. No new matter has been added by any of the amendments to the specification. Applicant respectfully requests reconsideration and withdrawal of the Examiner's rejections in view of the foregoing amendments and following remarks.

CLAIM REJECTIONS – 35 U.S.C. § 102

Claims 1-3, 15-16, and 18

This rejection is respectfully traversed. The Examiner has rejected claims 1-3, 15-16, and 18 under 35 U.S.C. § 102(b) as being “anticipated” by Lindqvist (U.S. Patent No. 4,541,793).

In particular, the Examiner stated:

Lindqvist teaches a circular die for extrusion (Fig. 2) the die having an outer die (Fig. 2, #35) having a generally conically shaped opening and in fluid communication with an extruder (Fig. 2, #22); an inner cone (Fig. 2, #34) nested in non-contact with the outer conically shaped die opening; a drive shaft (Fig. 2, #30) connected to the inner cone and located outside of the outer die, wherein the inner cone rotates axially with the drive shaft (col. 3, lines 16-21); a motor (Fig. 2, #45) connected to the drive shaft (Fig. 2, that which puts the shaft and inner cone is, by definition, a motor); and the inner cone and outer circular die can rotate axially independent of each other (col 3, lines 59-63).

Claims 1-3, 15-16, and 18, are novel despite the teachings of Lindqvist '793. Contrary to what the examiner states, Lindqvist '793 does not teach or suggest that an inner component is attached to a drive shaft existing “outside” of an outer component. Specifically, Lindqvist '793 teaches in col 3, lines 17-19 that an outer component 35 is mounted such that it rotates around a shaft 30. This shaft is clearly not “outside” of the outer component. Further, according to col 3, lines 16-17, the inner component 34 is attached to the shaft 30 where the shaft 30 is only described as inside of the outer component 35.

To the extent that the Examiner believes the claims as originally drafted and submitted were not clear in this regard, the claims have been amended to make this point more clearly. Specifically, the claims have been amended to highlight that the inner component is mounted externally to the extruder by the addition of the phrase “such that said drive shaft is not in contact

with the extrudate.” The newly amended claims are attached as Exhibit A at the end of this Response showing how the claims as originally submitted have been modified. As modified, the proposed claims are more fully in a state for allowance.

In the present invention in Claim 1, the outer element is not mounted “around” the drive shaft. Further, in the present invention, the extruded material does not pass over moving parts as taught and claimed in Lindqvist ‘793. In Lindqvist ‘793, the extruded plastic passes over such elements as the shaft 30 attached to the inner nozzle component 34 and the bearings 39. Mounting the inner nozzle component on an external shaft according to the present invention provides benefits and an embodiment not disclosed by Lindqvist ‘793.

Similarly, independent Claim 15 of the current invention is directed at an extruder die (inner component) which is connected to a drive shaft located externally to the extruder. The same arguments used to support Claim 1 can be used to support Claim 15. Since Claims 2-3 are dependent on Claim 1, similar arguments supporting Claim 1 can be made to support the allowance of Claims 2-3. Claims 16 and 18 depend from Claim 15, thus similar arguments used to support Claim 15 can be used to support the allowance of Claims 16 and 18.

Such rejection under §102 for anticipation requires that the single reference teach each and every element or step of the rejected claim. *See, Atlas Powder v. E.I. DuPont*, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984). A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). Examiner’s rejection under §102 fails to meet this test.

Lindqvist ‘793 does not show every element of the claimed invention, and therefore, does not anticipate the claimed invention. Thus, a rejection under 35 U.S.C. § 102 is improper. Applicant respectfully requests Examiner to withdraw this rejection.

CLAIM REJECTIONS – 35 U.S.C. §103(a)

Claims 4, and 17

The Examiner rejected claims 4 and 17 under 35 U.S.C. §103(a), as being unpatentable over Lindqvist (U.S. Patent No. 4,541,793) in view of Thomas (U.S. Patent No. 4,444,702). The Examiner has stated that:

Thomas et al teach an inner cone (Fig. 1, #17) being adjustable fore and aft within an outer circular die (through the movement generated by piston #21) for the purpose [of] controlling the diameter of the extruded product (col 4, lines 3-30).

This rejection is respectfully traversed. Claims 4 and 17 are non-obviousness despite the teachings of Lindqvist '793 in view of Thomas '702. The prior art cited by Examiner does not, either alone or in combination, teach or disclose every element of Applicant's invention in Claims 1 and 15; Claims 4 and 17 depend from independent Claims 1 and 15, respectively, and thus contain the limitations of these independent claims.

Unlike the device of the present invention, Lindqvist '793 does not teach or claim an inner component attached to a shaft external to an extruder opening. Further, according to the invention taught by Thomas '702, and as referenced by the Examiner in col. 4, lines 3-30, Thomas '702 teaches that the manipulation of the inner extruder component is through a mechanism internal to the extruder, much like the invention disclosed by Lindqvist '793. The teaching of the Thomas '702 invention is focused on the disclosure of a program element to control "wall thickness" as the extrudate fills a mold below the exit to an extruder nozzle. By implication, Thomas '702 is teaching that it is most desirable to have a mold residing external to the extruder leaving no space for a shaft or other object (see col. 7, lines 16-23). Thus, Thomas '702 seems to teach away from having a shaft and other equipment mounted externally to an extruder orifice.

Further, the suggestion or teaching for moving an inner component "fore and aft" is not explicit in Thomas '702. Most significantly, according to the drawings of Thomas '702, the adjustment of the inner component fore and aft is through a means mounted inside the outer element, much like the teaching of Lindqvist '793. The proposed Claims describe an inner component that is mounted and controlled from a position external to an outer orifice. Thus, as described above in responding to the rejection of Claims 1-3, 15-16, and 18, the present invention is distinguishable from Thomas '702. Since the present invention is distinguishable from Lindqvist '793 and Thomas '702, especially where there is no suggestion to combine the teachings of these two patents, Claims 4 and 17 should be allowed. Since

Claims 1 and 15 have been modified (see attached claims below), proposed Claims 4 and 17, being dependent on Claims 1 and 15, respectively, are more fully in a state of allowance.

It is well established that as a part of Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claimed subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Neither Lindqvist '793 nor Thomas '702, either alone or in combination, teach or disclose every element of Applicant's invention. Examiner's failure to provide the necessary suggestion or motivation for the combination of Lindqvist '793 and Thomas '702 creates a presumption that the combination selected by Examiner to support the obviousness rejection is based on hindsight. Examiner has not established a *prima facie* case of obviousness. Applicant respectfully requests Examiner to withdraw this rejection of Claims 4 and 17.

Claims 4 and 17

The Examiner also rejected claims 4 and 17 under 35 U.S.C. §103(a), as being unpatentable over Lindqvist (U.S. Patent No. 4,541,793) in view of Kader (U.S. Patent No. 3,985,490). The Examiner has stated that:

Kader teaches an inner cone (Fig. 1, #14) being adjustable fore and aft within an outer circular die (through the movement of rod #28) for the purpose [of] controlling the diameter of the extruded product (col. 3, lines 20-33).

This rejection is respectfully traversed. Claims 4 and 17 are non-obviousness despite the teachings of Lindqvist '793 in view of Kader '490. The prior art cited by Examiner does not, either alone or in combination, teach or disclose every element of Applicant's invention in Claims 1 and 15; Claims 4 and 17 depend from independent Claims 1 and 15, respectively, and thus contain the limitations of these independent claims.

According to the Examiner, Kader '490 in col. 3, lines 23-32 teaches that the thickness of the extruded material may be altered by moving up or down the control rod 28 and the mandrel 14. However, unlike the device of the present invention, as noted above, Lindqvist '793 does not teach or claim an inner component attached to a shaft external to an extruder opening.

Further, according to the invention taught by Kader '490, Kader '490 also does not teach or claim an inner component attached to a shaft external to an extruder opening. Referring to Figure 1, fundamental to the Kader '490 invention is a cylindrical core member extending into a cylindrical housing, and a mandrel (rod) which is "slidably disposed in" the housing or cavity of the extruder (col. 8, lines 9-25). Thus, even though Kader '490 teaches a movable or "slidable" inner component which is conically shaped and generally residing at the exit of the extruder nozzle, Kader '490 does not teach or imply a component which is mounted externally to the extruder nozzle. Specifically, Kader '490 teaches that it is preferable to have a blow-molding apparatus below an extruder nozzle to receive extrudate (see col. 4-5, lines 68 and lines 1-3; and col. 5, lines 8-12). It appears that Kader '490 is teaching away from having an inner component externally attached to shaft.

According to the teachings and drawings of Kader '490, the adjustment of the inner component fore and aft is through a "means" mounted inside the housing, which is also much like the teaching of Lindqvist '793. Absent some teaching to mount the inner component externally to the extruder nozzle or extruder exit, neither Lindqvist '793 nor Kader '490 can reasonably be used to support an obviousness-type rejection of Claims 4 and 17 of the present invention. Without any such teaching, it would not be obvious to a person having ordinary skill in the art to mount the inner component externally from the extruder nozzle. Absent some teaching, suggestion, or incentive to modify Lindqvist '793 in view of Kader '490 in the manner disclosed by the present invention, the presently claimed invention can be reached only through an improper use of hindsight reconstruction using the applicants' disclosure as a template to make the necessary changes to reach the claimed invention.

Thus, like described above in responding to the rejection of Claims 1-3, 15-16, and 18, the present invention is distinguishable from Kader '490, and the combination of Lindqvist

'793 and Kader '490. Since the present invention is distinguishable from Lindqvist '793 and Kader '490, and their combination, Claims 4 and 17 should be allowed.

It is well established that as a part of Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claim subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Neither Lindqvist '793 nor Kader '490, either alone or in combination, teach or disclose every element of Applicant's invention. Examiner's failure to provide the necessary suggestion or motivation for the combination of Lindqvist '793 and Kader '490 creates a presumption that the combination selected by Examiner to support the obviousness rejection is based on hindsight. Examiner has not established a *prima facie* case of obviousness. Applicant respectfully requests Examiner to withdraw this rejection of Claims 4 and 17.

Claims 5-8

The Examiner also rejected Claims 5-8 under 35 U.S.C. §103(a), as being unpatentable over Lindqvist (U.S. Patent No. 4,541,793) in view of Omi (U.S. Patent No. 6,547,551). The Examiner has stated that:

Omi et al. teach a circular die with an outer die and an inner core wherein cooling jackets with built in heaters (Fig. 5, #90) are provided to the outer die and the inner core for the purpose of supplying temperature control as the product is extruded (col. 3, lines 53-59).

This rejection is respectfully traversed. Claims 5-8 are non-obviousness despite the teachings of Lindqvist '793 in view of Omi '551. The prior art cited by Examiner does not, either alone or in combination, teach or disclose every element of Applicant's invention in Claims 5-8.

As mentioned above, unlike the device of the present invention, Lindqvist '793 does not teach, claim or suggest an inner component attached to a shaft external to an extruder opening. Similarly, Omi '551 does not teach, claim or suggest such an arrangement. Referring to Figures

1, 4 and 5, Omi '551 shows but does not describe a mandrel or shaft as part of the extruder apparatus. Where Omi '551 shows such a shaft, it is internal to the extruder or "crosshead." In the present application of the Applicant, such a shaft is external to the extruder apparatus.

The Examiner cites to Omi '551 as teaching heating and cooling of extruder components. Specifically, as mentioned by the Examiner, in col. 3, lines 53-59, Omi '551 allegedly teaches "cooling jackets with built-in heaters" in contact with a crosshead body. However, the heating and cooling claim elements in Claims 5-8 in the present invention are in addition to the limitations found in Claim 1. Claims 5-8 depend from independent Claim 1, and thus Claims 5-8 contain the limitations of independent Claim 1. Omi '551, either alone or in combination with Lindqvist '793, does not teach every element found in Claims 5-8. Further, there is no teaching or suggestion in Omi '551 to combine such an external shaft with the heating and cooling elements taught by Omi '551. Omi '551 does not teach or suggest heating and cooling for the purpose or use of changing the characteristics of one surface of the extrudate relative to another. The purpose or use of the heating and cooling elements of Omi '551 is to reduce the production time of each extruded product (see col. 3, lines 51-58).

Thus, like described above in responding to the rejection of Claims 1-3, 15-16, and 18, the present invention is distinguishable from Omi '551, and the combination of Lindqvist '793 and Omi '551. Since the present invention is distinguishable from Lindqvist '793 and Omi '551, and their combination, Claims 5-8 should be allowed.

It is well established that as a part of Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claim subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Neither Lindqvist '793 nor Omi '551, either alone or in combination, teach or disclose every element of Applicant's invention. Examiner's failure to provide the necessary suggestion or motivation for the combination of Lindqvist '793 and Omi

'551 creates a presumption that the combination selected by Examiner to support the obviousness rejection is based on hindsight. Examiner has not established a *prima facie* case of obviousness. Applicant respectfully requests Examiner to withdraw this rejection of Claims 5-8.

Claims 6 and 8

The Examiner also rejected Claims 6 and 8 under 35 U.S.C. §103(a), as being unpatentable over Lindqvist (U.S. Patent No. 4,541,793) in view of Waters (U.S. Patent No. 4,573,893). The Examiner has stated that:

Waters et al. teach a circular die with an outer die and an inner core wherein both the inner core and outer die are cooled for the purpose of rapidly and uniformly cooling the product to improve the quality of the product (col. 1, lines 58-61).

This rejection is respectfully traversed. Claims 6 and 8 are non-obviousness despite the teachings of Lindqvist '793 in view of Waters '893. The prior art cited by Examiner does not, either alone or in combination, teach or disclose every element of Applicant's invention in Claims 6 and 8.

As mentioned above, unlike the device of the present invention, Lindqvist '793 does not teach, claim or suggest an inner component attached to a shaft external to an extruder opening. Similarly, Waters '893 does not teach, claim or suggest such an arrangement. Referring to Figure 2, Waters '893 teaches a mandrel 38 inside a die body 26 forming "an annular channel 40 about the mandrel's periphery through which the resin flows" (col. 3, lines 52-56).

According to the Examiner, Waters '893 teaches a cooling component or system as mentioned in col. 3, lines 4-41. However, the cooling claim elements in Claims 6 and 8 in the present invention are in addition to the limitations found in Claim 1. Claims 6 and 8 depend from independent Claim 1, and thus Claims 6 and 8 contain the limitations of independent Claim 1. Waters '893, either alone or in combination with Lindqvist '793, does not teach every element found in Claims 6 and 8. Further, there is no teaching or suggestion in Waters '893 to combine an external shaft connected to an inner component with a cooling system (the element taught by Waters '893).

Thus, like described above in responding to the rejection of Claims 1-3, 15-16, and 18, the present invention is distinguishable from Waters '893, and the combination of Lindqvist '793 and Waters '893. Since the present invention is distinguishable from Lindqvist '793 and Waters '893, and their combination, Claims 6 and 8 should be allowed.

It is well established that as a part of Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claim subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Neither Lindqvist '793 nor Waters '893, either alone or in combination, teach or disclose every element of Applicant's invention as claimed in Claims 6 and 8. Examiner's failure to provide the necessary suggestion or motivation for the combination of Lindqvist '793 and Waters '893 creates a presumption that the combination selected by Examiner to support the obviousness rejection is based on hindsight. Examiner has not established a *prima facie* case of obviousness. Applicant respectfully requests Examiner to withdraw this rejection of Claims 6 and 8.

Claims 5 and 7

The Examiner also rejected Claims 5 and 7 under 35 U.S.C. §103(a), as being unpatentable over Lindqvist (U.S. Patent No. 4,541,793) in view of Kovach (U.S. Patent No. 3,311,952). The Examiner has stated that:

Kovach et al. teach a circular die with an outer die and an inner core wherein both the inner core and outer die are heated (Fig. 1, #66 and #68) the purpose of regulating the temperature of the die (col. 4, lines 25-41).

This rejection is respectfully traversed. Claims 5 and 7 are non-obviousness despite the teachings of Lindqvist '793 in view of Kovach '952. The prior art cited by Examiner does not, either alone or in combination, teach or disclose every element of Applicant's invention in Claims 5 and 7.

As mentioned above, unlike the device of the present invention, Lindqvist '793 does not teach, claim or suggest an inner component attached to a shaft external to an extruder opening. Kovach '952 also does not teach, claim or suggest that a shaft or mandrel, external to an extruder, can be attached to an inner part of a die or extruder apparatus. Specifically, Kovach '952 teaches that a "core" or inner component is secured in the outer component or "body 12 by a plurality of cap screws 25."

However, according to the Examiner, Kovach '952 teaches a heating component which may be attached to inner and outer components of an extruder apparatus. Specifically, with reference to Figure 1 of Kovach '952, and in col. 4, lines 25-41, Kovach '952 allegedly teaches a heating element 66 which may be attached to an inner element 41 or an outer die 10 (see the "band heating unit" 68).

However, the heating claim elements in Claims 5 and 7 of the present invention are in addition to the limitations found in Claim 1. Claims 5 and 7 depend from independent Claim 1, and thus Claims 5 and 7 contain the limitations of independent Claim 1. Kovach '952, either alone or in combination with Lindqvist '793, does not teach every element found in Claims 5 and 7 given the limitation in Claim 1, which includes a drive shaft connected to an inner cone and which is "located outside of said outer die." There is no such drive shaft taught in Kovach '952. Further, there is no teaching or suggestion in Kovach '952 to combine an external shaft connected to an inner component with a heating element as taught by Kovach '952.

Thus, as described above in responding to the rejection of Claims 1-3, 15-16, and 18, the present invention is distinguishable from Kovach '952, and the combination of Lindqvist '793 and Kovach '952. Since the present invention is distinguishable from Lindqvist '793 and Kovach '952, and their combination, Claims 5 and 7 should be allowed.

It is well established that as a part of Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claim subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by

combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Neither Lindqvist '793 nor Waters '893, either alone or in combination, teach or disclose every element of Applicant's invention as claimed in Claims 5 and 7. Examiner's failure to provide the necessary suggestion or motivation for the combination of Lindqvist '793 and Kovach '952 creates a presumption that the combination selected by Examiner to support the obviousness rejection is based on hindsight. Examiner has not established a *prima facie* case of obviousness. Applicant respectfully requests Examiner to withdraw this rejection of Claims 5 and 7.

CONCLUSION

It is respectfully urged that the subject application is patentable over references cited by Examiner and is now in condition for allowance. Applicant requests consideration of the application and allowance of the claims as now modified. A set of claims as they are now proposed, and a set of claims showing how previously submitted claims have been modified, are included with this response. If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is cordially invited to contact Colin P. Cahoon at 972.367.2001.

Respectfully submitted,

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